1. **COURSE TITLE\*:** Engineering Materials
2. **CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*:** ENDS 1151
3. **PREREQUISITE(S)\*:** MATH1120 or higher **COREQUISITE(S)\*:** NONE
4. **COURSE TIME/LOCATION: (*Course Syllabus – Individual Instructor Specific*)**
5. **CREDIT HOURS\*:** 3 **LECTURE HOURS\*:** 2

**LABORATORY HOURS\*:** 1**(**2 **contact hours) OBSERVATION HOURS\*:** 0

1. **FACULTY CONTACT INFORMATION: *(Course Syllabus – Individual Instructor Specific)***
2. **COURSE DESCRIPTION\*:**

This course will provide the student with a basic understanding of materials and the important practical considerations that must be used in material selection and specification in design, manufacturing and failure analysis. This course includes lectures and labs.

1. **LEARNING OUTCOMES\*:**

The Student will develop basic knowledge of types, applications, and manufacturing techniques of standard materials used in industry today.

1. How to think and where to find information specifically associated Engineering Materials.
2. The basic properties and practical applications of metals, ceramics polymers and composites.
3. The properties and characteristics that must be considered when using and specifying materials for design and fabrication purposes.
4. Iron and steel terminology, processes, specifications and heat treatments.
5. The terminology, processes, specifications and heat treatments of aluminum, copper, and other metal alloy systems.
6. The numerous specification organizations and how to obtain copies of their specs.
7. **ADOPTED TEXT(S)\*:** *Engineering Materials Properties and Selection*, ninth edition, K.G. Budinski & M.K. Budinski, Prentice Hall 2010, ISBN #0-13-712842-6
8. **OTHER REQUIRED MATERIALS: (SEE APPENDIX C FOR TECHNOLOGY REQUEST FORM.)\*\* 1.** Scientific calculator **2.** Scale and Protractor 3. Graphing paper (1/4" squares) 4. A 3-pin paper binder for keeping correct solution of assigned problems

5.Paper for solution of problems pre-printed with outline will be provided.Student will need an auxiliary storage device, flash drive or network home-drive. Students are asked to provide access to a computer with web-access and Microsoft Office if their work will not be completed on campus where such equipment is provided.

1. **GRADING SCALE\*\*\*:**

Grading will follow the policy in the catalog. The scale is as follows:

A: 900 – 1000

B: 80 – 899

C: 700 – 799

D: 600 – 699

F: 0 – <600

1. **GRADING PROCEDURES OR ASSESSMENTS: (*Course Syllabus – Individual Instructor Specific)***

|  |  |  |
| --- | --- | --- |
| *Category* | *Total Points* | *% of Grade* |
| Homework | 100 | 10% |
| Quizzes | 300 | 30% |
| Midterm | 300 | 30% |
| Final Exam | 300 | 30% |
| Total | 1000 | 100% |

1. **COURSE METHODOLOGY OR COURSE FORMAT: *(Course Syllabus – Individual Instructor Specific)***

The Student will complete learning units, labs, homework assignments, student papers, presentations, and examinations.

The SSCC Engineering Department is committed to assessment (measurement) of student achievement of academic outcomes. This process addresses the issues of what you need to learn in your program of study and if you are learning what you need to learn. The assessment program has four specific and interrelated purposes:

1. To improve student academic achievement.
2. To improve teaching strategies.
3. To document success and identify opportunities for program improvement.
4. To provide evidence of institutional effectiveness.

Students are assessed and graded on their academic achievement of the outcomes for the course. They may be required to participate in broader assessment activities. This course is required by Miami U (Ohio) in their ABET accredited engineering technology programs.

Course methodology may include, but not limited to, lecture and problem solving, independent and group projects, in-class and home assignments, quizzes, papers, reports, presentations and tests.

Problem solving will use both graphical and mathematical methods.

Attendance is required.

1. **COURSE OUTLINE: *(Course Syllabus – Individual Instructor Specific)***

|  |  |  |  |
| --- | --- | --- | --- |
| **WEEK** | **MATERIAL** | **ASSIGNMENTS** | **LEARNING OBJECTIVES** |
| **1** | Introduction, Forming of Engineering Materials | Instructor specific | **1, 6** |
| **2** | Chemical and Physical Properties | Instructor specific | **2, 3** |
| **3** | Mechanical Properties | Instructor specific | **2, 3, 4, 5** |
| **4** | Mechanical Properties | Instructor specific | **2, 3, 4, 5** |
| **5** | Steel Products | Instructor specific | **2, 3, 4, 5** |
| **6** | Heat Treatment of Steels. | Instructor specific | **2, 3, 4, 5** |
| **7** | Carbon and Alloy Steels. | Instructor specific | **2, 3, 4, 5** |
| **8** | Carbon and Alloy Steels. | Instructor specific | **2, 3, 4, 5** |
| **9** | Midterm | Instructor specific | **1, 2, 3, 4, 5, 6** |
| **10** | Corrosion | Instructor specific | **2, 3, 4, 5** |
| **11** | Stainless Steel | Instructor specific | **2, 3, 4, 5** |
| **12** | Copper and Its Alloys | Instructor specific | **2, 3, 5** |
| **13** | Aluminum and Its Alloys | Instructor specific | **2, 3, 5** |
| **14** | Polymers | Instructor specific | **2, 3, 5, 6** |
| **15** | Polymers | Instructor specific | **2, 3, 5, 6** |
| **16** | **FINAL** | Instructor specific | **1, 2, 3, 4, 5, 6** |

**15. SPECIFIC MANAGEMENT REQUIREMENTS\*\*\*:**

* + All assignments and tests must be turned in on time.
  + Name must be in the top right corner of every page to be graded.
  + Students may work on their own time to complete the assignments.
  + Some group work is encouraged on exercises and assignments.
  + Assignments must be in 3-pin paper binder to pass the course.
  + Examinations will include written and graphical components.

**16. FERPA:\***

Students need to understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**17. DISABILITIES:\***

Students with disabilities may contact the Disability Services Office, Central Campus, at 800-628-7722 or 937-393-3431.

**18. OTHER INFORMATION\*\*\*:**

**SYLLABUS TEMPLATE KEY**

**\*** Item cannot be altered from that which is included in the master syllabus approved by the Curriculum Committee.

**\*\*** Any alteration or addition must be approved by the Curriculum Committee

**\*\*\*** Item should begin with language as approved in the master syllabus but may be added to at the discretion of the faculty member.